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VIVISECTION.

BY FREDERICK GAERTNER.[1]

IN this essay I propose to examine the question whether vivisection should be permitted in the interest of humanity and and science; and if so, with what restrictions.

Vivisection is the term employed for designating the operation performed with the knife upon living animals. This term, although including operations upon the human being, is applied principally to those performed upon the lower animals, such as the cat, dog, rabbit, guinea pig, etc., even frogs and fishes.

The performing of a surgical operation upon a human being, whether under the influence of anæsthetic or in a comatose or hypnotic condition, is simply one kind of vivisection. Now why should vivisection of the lower animals be prohibited when the same operation is performed upon human beings every day?

What are the objects of vivisection? I answer: first, the increasing of our knowledge of physiology; second, the confirmation of facts previously known; third, the acquisition of dexterity in operative surgery; and fourth, the experimental application of inoculative medicine, including vaccination and preventive and curative inoculation.

Without this process commonly called vivisection the sciences of medicine, surgery, anatomy, physiology, histology, embryology, and pathology would even yet be in their infancy, and in some respects at least would remain forever undeveloped.

Vivisection may be traced back as far as the years 377 and 460 B.C. Hippocrates, the greatest of ancient scientists, was a vivisector. Æsculapius, Celsus, Aulus, Cornelius, and later, Galenus Claudius, and other great ancient scientists, practiced vivisection upon the lower animals, and even upon human beings.

It is too well known to be disputed that Galenus Claudius (Galen), who lived from 131 to 201 A.D., was the first to discover that the arteries in the human body contained blood instead of air, as had been previously supposed. How else than by the process of vivisection could he have made this wonderful discovery?

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Let me cite a few of the principal benefits that have accrued to physiology, and hence to the art of healing, by means of vivisection. By this course of procedure the doctrine of the circulation of the blood, the lymphatic circulation through the lymphatic vessels, and that of chyle through the lacteals, were established. Thus also our present knowledge of the nervous system and its functions is due to vivisection, since these facts could not have been obtained by the most minute anatomical research. Our present rational modes of treating epilepsy and the various forms of paralysis are due to the experiments of Brown-Sequard, Bernard, and others, upon the living animals.

The causes of the sounds of the heart would never have been understood without vivisectional experiments, and the stethoscope would have been useless in the diagnoses of cardiac diseases. The true nature of diabetes was thus discovered.

The Hunterian treatment of aneurism by ligature is the result of experiments upon the living animal.

The study and application of anæsthetics, one of the greatest boons to mankind, could be pursued only by experiments upon the living animal. Who would regret the suffocation of even greater numbers of animals when he considers the amount of agony and misery saved to man?

If there be a solution—and doubtless there is one—of such questions as the best method of restoring to life one apparently drowned, the restoration of one suffering from apparently fatal effects of chloroform, why chloroform kills, etc., who would regret the sacrifice of the animals necessary for these solutions?

What have been the results of vivisectional experiments during the last century? By means of vivisection the great French chemist and bacteriologist, Pasteur, discovered his wonderful preventive inoculative treatment of hydrophobia.

Dr. Austin Flint, Jr., proved that the liver is an excretory as well as a secretory organ. By comparing the blood drawn from the carotid arteries of a dog with that contained in the jugular veins he has demonstrated that cholesterine—*i.e.*, the excretion of the liver—is the product of nerve action. Thus he was enabled to study that condition of blood poisoning which results from an abnormal accumulation of cholesterine in the vital fluid.

By means of vivisection we have been led to the present advanced state of knowledge in regard to the processes of digestion, assimilation, and nutrition.

Thus the Old World, leaning upon the staff of experience, is steadily advancing, climbing the lofty heights of science with a firm and certain tread. But we Americans, an enterprising nation, are sitting idly by, shackled by false ideas of humanity, while over our heads hangs an obscuring pall called the laws prohibiting vivisection.

Who are making the great scientific discoveries, the investigations and researches of to-day? Who are advancing every branch of medical and surgical science? Who are the great protectors of humanity? Answer, the vivisectors.

Science cannot advance without the aid of vivisection; therefore vivisection must and will be practiced, in spite of laws and governments. Then why not regulate and control the practice of vivisection, instead of prohibiting it?

Congress should be urged to pass a law making the art of vivisection part of the curriculum of every reputable medical college. Our government should assist and encourage scientific vivisectors in their researches and investigations, just as England, Germany, France, and Austria have done during the last century, by offering capital prizes and honorary medals to scientists, microscopists, and physiologists. Why not? All is in the interest of science, and principally for the protection of humanity against diseases.

But at the same time this process, this science of vivisection, should not be free to every meddler and dabbler in science. It should be practiced only by scientists, such as expert microscopists, physiologists, and pathologists. If an ordinary physician or other learned man wishes to practice vivisection for study or experimental purposes, let him be compelled to do so under the supervision and instruction of a licensed vivisector at his laboratory, and under his personal observation.

Let Congress authorize the President of the United States to appoint a board of examiners for the purpose of examining applicants for the position of vivisector. Of course such applicants would be no other than expert scientists, microscopists, pathologists, and histologists. Let such a licensed vivisector be connected with every reputable medical college having a pathological and histological laboratory.

I am a strong advocate of anticruelty societies, but at the same time I believe that man has the first claim upon humanity. If the suffering of mankind can be alleviated, is it not cruel to refuse relief?

If the practice of vivisection is properly regulated the suffering of the animal can be greatly diminished. Let the work be done scientifically, with dexterity, ingenuity, and skill, and whenever it is possible let the animal be placed under the influence of an anæsthetic, chloroform or ether.

I have had the opportunity of studying the process of vivisection and its results, during my sojourn in Europe, at Virchow's laboratory, Berlin, Rokitansky's laboratory, Vienna, Pasteur's laboratory, Paris, and the Von Recklinghausen laboratory, Strassburg, and I have witnessed several thousand vivisections, and in each and every instance I came to the conclusion that vivisection is a necessary procedure, and of paramount importance in the study of medicine and surgery, their kindred and contributing branches. It is simply impossible to obtain a practical knowledge of physiology, histology, etc., without vivisection.

To prove that my assertions are correct, and based upon scientific principles, I will narrate a few practical cases in medicine and surgery in which by no other means than vivisection were the scientists able to demonstrate to the medical profession of the whole world that a certain medicine, or a certain described surgical operation, is necessary to save the patient and insure a speedy and complete cure.

Let us consider, first, *surgery*. The various surgical operations and procedures, especially as to their technique, have been developed and perfected by means of vivisection. Consider particularly the abdominal operations, such as those performed upon the stomach, intestines, liver, spleen, kidneys, etc. The honor of perfecting these operations is due principally to Prof. Billroth, of Vienna, Austria, the boldest surgeon that ever lived. He, in the year 1879, performed for the first time that operation known as gastrotomy, upon a living human being (a woman). This operation consisted of a resection of the pyloric end of the stomach for cancer of the stomach. A complete recovery resulted. (An excision of a portion of the stomach was made, and the intestine was sewed to the stomach.) Of course the original idea was developed by means of vivisection.

Previous to this adventure Prof. Billroth and his assistant, Dr. Woelfler, had performed this operation upon ten living dogs. This was done in order to determine positively, first, whether or not this bold surgical operation was possible and justifiable; second, the best mode and technique of this surgical procedure; third, the rate of mortality; and fourth, the applicability of operative surgery in the treatment of such grave afflictions.

In all the various surgical operations upon the intestines there arose questions in regard to the technique, and principally as to the best application of stitches, sutures, instruments, antiseptic dressing, etc., as to the form, quality, and quantity applied. All these questions and difficulties were answered and overcome by experiments upon living dogs and cats. Excisions of the spleen, of one kidney, and of a part of the liver, were tried time and again upon living animals long before the operations were performed upon human beings with good results.

The various plastic surgical operations, operations upon the muscles, nerves, and bones, operations upon the eye, ear, nose, and throat, were first developed and perfected by vivisectional experiments upon animals.

Some of the more delicate surgical operations, such as castration, oöphorectomy, ovariotomy, etc., were first thoroughly studied and then applied in operative surgery after repeated experiments upon living animals. These experiments and proofs have justified the surgeons in such bold surgical operations for the relief and permanent cure of such dreadful pathological disorders.

Since the term vivisection includes all experiments upon the living animal, whether the knife is used or not, there is also a medical phase of the question, and here it will suffice to say that the physiological action of all medicinal preparations would never have been thoroughly understood had it not been for experiments upon living animals. These experiments serve to determine, first, the physiological action of a drug or preparation; second, the minimum and maximum dosage; third, the poisonous effects of drugs, and their antidotes; and 4th, the effects of hypodermic injections and inoculations.

To an unbiased thinker I believe I have proved that vivisection is both necessary and justifiable. Even the humanitarian, if he be a sportsman, thinks little of the pain given to animals in the chase. No one objects to the killing of animals for food or for their commercial value, even though the animal die a lingering and painful death. If it is legitimate to slay animals in order to supply food and luxuries, and even amusement, why should it not be legitimate to inflict pain upon or to slay an animal for the higher and nobler purpose of relieving suffering humanity and prolonging human life?

Therefore, again I say, remove the prohibition, but regulate and encourage the practice of the indispensable accessory of scientific progress,—*vivisection.*